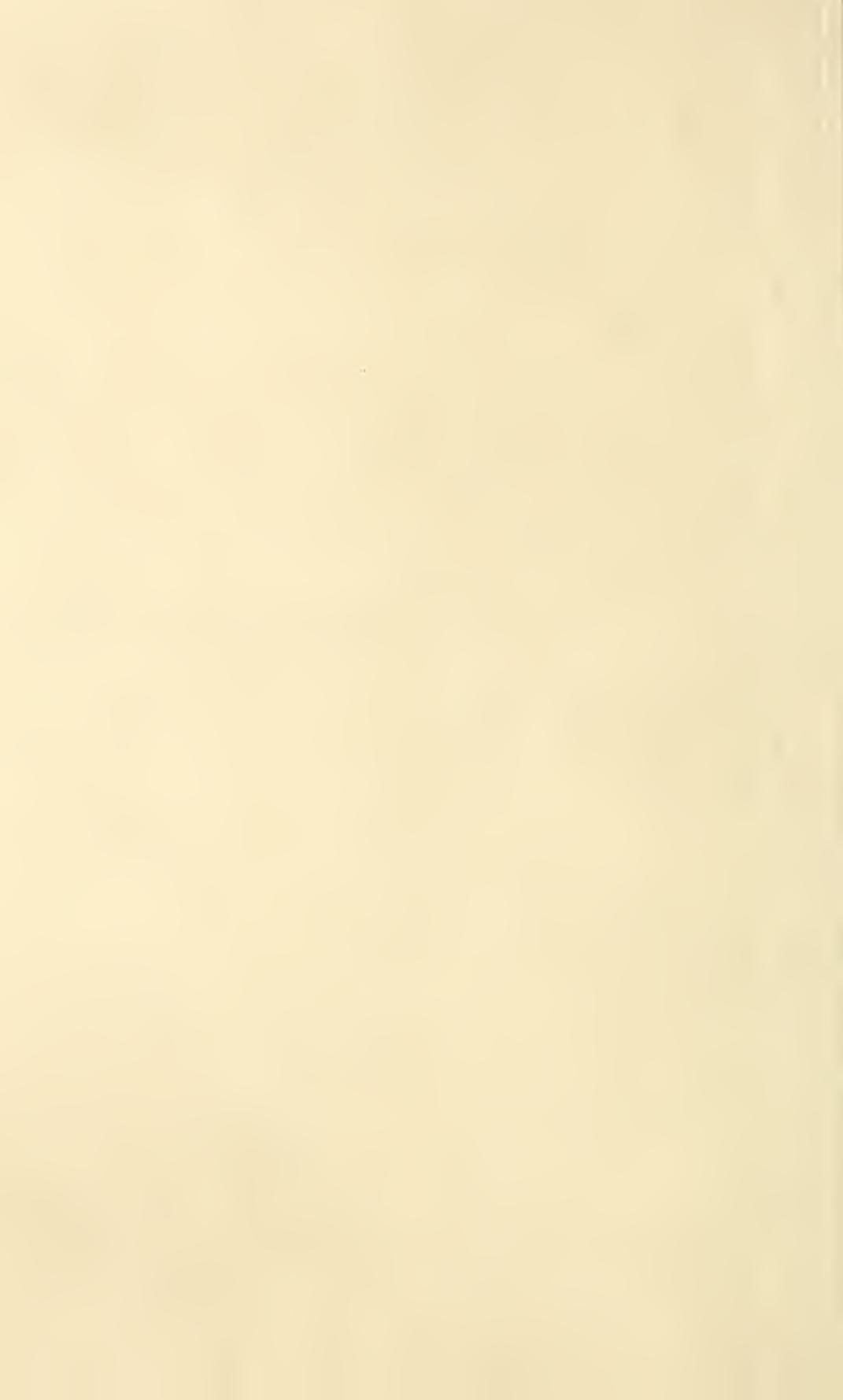


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# 455



the  
**European  
CHAFER**  
... how we fight it



PA-455

U.S. DEPARTMENT OF AGRICULTURE



*the*  
**European**  
**CHAFER**  
*... how we fight it*

The European chafer<sup>1</sup> damages and sometimes destroys meadows, pastures, lawns, turf, winter grains, and legumes. The larvae, or grubs, of this insect feed on roots of plants. They create unsightly, barren spots that make the soil subject to rapid erosion. Heavy infestations can cause serious crop damage.

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<sup>1</sup> *Amphimallon majalis*.



European chafer larva.

The European chafer probably first entered the United States from Europe during the late 1920's or early 1930's. It was first discovered in Wayne County, N.Y., in 1940. By 1958 it was known to exist in nine counties of western New York State, and in 1959 it was found infesting 14 square miles of Brooklyn and the New York harbor area. Isolated infestations have occurred in Connecticut, New Jersey, and West Virginia.

#### DEVELOPMENT AND HABITS

In its development, the European chafer has four stages—egg, larva (or grub), pupa, and adult (or beetle). The insect is destructive only in the larval stage.

The life cycle usually is completed in 1 year, but occasionally requires 2 years.

In June or July each female beetle lays 20 to 40 milk-white eggs, 2 to 6



Eggs of European chafer.

inches deep in the soil. Soon afterward the female dies.

Larvae hatch from the eggs in 2 to 3 weeks; they start immediately to feed on roots of grasses and other plants. When fully grown, in about  $3\frac{1}{2}$  months, they are C-shaped, about  $\frac{3}{4}$  inch long, and white; they have brown heads.

Larvae feed throughout summer, and burrow below the frost line in fall. The following spring they come nearer to the surface and resume feeding.

After feeding during spring, most larvae change to pupae. Some spend a second summer in the soil and change to pupae the second spring.

Newly formed pupae are soft bodied and creamy white. They turn reddish brown just before they change to beetles.

The beetles resemble May beetles (also called June beetles). They are oval, about  $\frac{1}{2}$  inch long, and light brown or tan. Shallow grooves occur lengthwise on their horny forewings.

In a normal season, beetles emerge from the soil about the middle of June; they appear only for brief mating flights. About sunset on warm days, thousands of these insects swarm like bees around trees, tall shrubs, light poles, or similar objects. They fly for about half an hour, then settle on the objects to mate. At dawn they burrow

into the soil, and the females lay their eggs. Mating flights may be repeated several times in a season. The beetles are most abundant from mid-June to July 10.

## HOW INFESTATIONS SPREAD

European chafers may fly as far as 2 miles during a mating flight, spreading their infestation over an area of that radius. The beetles may be carried long distances in automobiles, railway cars, or aircraft. All forms of the insect may be transported from place to place in gravel, soil, and sod, and among roots of plants when soil is attached.

## QUARANTINES

Areas infested with the European chafer are under a Federal quarantine designed to prevent interstate spread of the insect. Similar State quarantines are in force to prevent spread within State borders.

Where quarantines are in force, a certificate is required for the shipment



European chafer pupa.



BN-12386-X

**Adult European chafers swarming around hawthorne.**

of articles that might harbor the eggs, larvae, pupae, or beetles of the chafer. Such articles include sod, topsoil, gravel, sand, and plants with soil on the roots. Certificates are required to ship previously infested articles after they have been made free of infestation by the use of insecticides or by other approved means.

Information about State and Federal quarantine regulations may be obtained from State departments of agriculture, county agricultural agents, or plant pest control offices of the U.S. Department of Agriculture.

## **DETECTING INFESTATIONS**

The best way to detect infestations is to watch for larvae in sod, and for mating flights of the beetles during June and July.

Signs that the European chafer may be present include—

- Large numbers of beetles “swarming” about trees, shrubs, or light poles during evening hours in June or early July.

- Dead or dying spots in lawns, in turf of golf courses, cemeteries, pastures, or in fields of winter grains.
- White larvae feeding on the roots of plants around the edges of bare spots in sod or fields of grain.
- Loosened soil in bare spots of sod, indicating that birds, moles, skunks, or other animals have been digging for larvae.

These signs may indicate only the *possibility* of European chafer infestation. They could also indicate presence of the Japanese beetle or the May beetle. All three insects are destructive.

## **HOW YOU CAN HELP**

State and Federal agricultural agencies use measures to control the European chafer wherever its presence is detected. Entomologists of these agencies make annual surveys to locate infestations and determine the extent of the chafer's spread. You can help to detect and control the insect if you—



- Watch for signs of this pest in your area. Collect specimens of larvae or beetles in rubbing alcohol and give or mail them promptly to your county agent, to your State entomologist, to a local plant pest control representative, or to the Plant Pest Control Division, U.S. Department of Agriculture, Washington 25, D.C. Include your name and address, the date you collected the specimens, and a note stating that they may be the European chafer. *Do not send live specimens through the mail.*

- Apply insecticide if you discover an infestation on your property.
- Comply with State and Federal regulations governing the movement of articles from infested areas.
- Cooperate with local plant pest control officials in controlling infestations.
- Persuade your neighbors to cooperate in detecting evidence of the pest and reporting suspected infestations.

## CONTROL WITH INSECTICIDE

The only practical way to control the European chafer is to kill the larvae by applying insecticide to the soil. Wettable powders, dusts, or granules may be used. A single application will give satisfactory control for at least 3 years.

***Caution: Pasture, grain, or hay land requires special treatment to prevent leaving dangerous insecticide residues. Before applying insecticide to such areas, get the recommendations of your State or Federal plant pest control inspector or State experiment station. Follow instructions on insecticide container labels.***

### Treating Large Areas

To treat large areas of nonagricultural land, apply dieldrin, aldrin, or heptachlor at the rate of 3 pounds of actual insecticide per acre; or, apply chlordane at the rate of 10 pounds per acre.

Purchased products may contain 5 to 50 percent of actual insecticide. Refer to container labels to learn the strength of the products you buy.

### Treating Small Areas

Recommendations by various States may differ slightly with respect to materials and dosages. However, insecticides listed in the accompanying guide<sup>2</sup> will give satisfactory control if applied as indicated. The areas should be watered but not flooded after insecticide has been applied.

## PRECAUTIONS

Insecticides are poisonous; handle them with care. Follow the directions and heed all precautions on container labels. Keep insecticides in closed, well-labeled containers, in a dry place where they will not contaminate food or feed, and where children and pets cannot reach them.

Do not wear insecticide-contaminated clothing. Avoid repeated or prolonged contact of insecticide with the skin. Do not inhale dusts or mists. Wash hands and face before eating or smoking.

When handling concentrates, avoid spilling them on the skin, and keep them away from the eyes, nose, and mouth. If you spill a concentrate on the skin or clothing, wash it off and change clothing immediately. If you get it in

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<sup>2</sup> Partially based on research by Cornell University, Geneva and Ithaca, N.Y.

Guide for applying insecticide to control the European chafer in lawns, turf, and other nonagricultural land

Insecticide	Amount to apply to 1,000 square feet			
	Wettable powder		Dust or granules	
	25 percent	50 percent	5 percent	10 percent
Dieldrin.....	5 ounces....	2½ ounces....	1½.....	¾
Aldrin.....	5 ounces....	2½ ounces....	1½.....	¾
Heptachlor.....	5 ounces....	2½ ounces....	1½.....	¾
Chlordane.....	1 pound....	½ pound....	5.....	2½

your eyes, flush them with plenty of water for 15 minutes and get medical attention.

Do not apply insecticide to a lawn or pasture when people or animals are on it. Do not let insecticide drift to an area where it might injure people or animals.

To protect fish and wildlife, do not contaminate streams, lakes, or ponds with insecticide.

## NATURAL ENEMIES

The European chafer has a number of natural enemies. Many species of wild birds eat the beetles, larvae, and pupae. Chickens, ducks, geese, and turkeys eat beetles that fall to the

ground; and they forage for larvae in the soil. Skunks, moles, and short-tailed shrews destroy many larvae. Certain species of beetles feed on eggs and larvae of the chafer. However, these enemies are not numerous enough to prevent chafer populations from increasing and spreading.

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Growth Through Agricultural Progress

